



During annual surveys of the Fort Richardson moose herd, every moose is individually counted.

Two BBS routes were established in 1994, a 50-stop route on the North Post and a 30-stop route on the South Post, including the Arctic Valley area. Both routes were surveyed each year from 1994 to 1997. The BBS routes have been surveyed by USFWS personnel and volunteers, and are always conducted between 10 through June 20.

MAPS is a long-term, nationwide study designed to quantify demographic patterns in migratory bird populations. This information will help USARAK determine its needs for a neotropical bird management plan. In 1994, two MAPS stations were established, one on the South Post at Bunker Hill, and one on the North Post along the northeastern shore of Otter Lake. The station at Bunker Hill was abandoned in 1995 due to vandalism, but the station at Otter Lake has been monitored each year since 1994. The final year of study will be 1998, satisfying the criteria of five consecutive years of data. At MAPS stations in Alaska, mist-netting and point counts are conducted during June and July to monitor productivity and survivorship in the local breeding bird populations.

Because the three projects outlined above are limited in their coverage of potential bird habitats on Fort Richardson, a specific bird checklist survey (atlas survey) is also being conducted. This atlas survey is designed to determine species distribution and abundance on a base-wide scale. In this survey, biologists systematically search the post for bird species throughout the months of June and July, following the methods of Andres (1995).

Moose: From the 1940s to the 1960s, the post was used extensively for mechanized troop training, resulting in disturbance to many areas. This promoted the growth of early successional species such as birch, aspen, alder, and willow. These species provided excellent moose habitat over large areas and caused the moose population to substantially increase.

In the late 1960s, there was a decrease in mechanized ground-training activities. Extensive areas of moose habitat eventually reverted to tall brush and timber. Both the quantity and quality of moose browse began to decline. Remaining prime moose habitat was over-browsed, and the moose population declined after moderately severe winters in 1970-71, 1971-72, and 1974-75.

Active habitat management utilizing a Hydro-Ax[™] to clear mature brush and promote regeneration of browse was initiated in 1975 when approximately 150 acres of brush was cleared, in the Davis and small arms ranges. Although habitat work has continued on an annual basis since its initiation, little has been accomplished during some years due to manpower constraints and equipment breakdowns. Since 1975, over 1,500 acres have been cleared, benefitting wintering moose on Fort Richardson.

The moose population on Fort Richardson was relatively stable during the period from 1986 to 1994 (Quirk 1996). This stability was due mainly to excellent summer feeding ranges, mild winters with light snowpack, and few predators in calving areas to affect productivity. Although winter habitat created by Hydro-Axing has generally helped to increase the food supply, in some areas it has been limited and in others, overbrowsed. A dramatic decline in the moose population occurred in the winter of 1994-1995 when a deep snowpack persisted for the longest duration in over 25 years in south-central Alaska. Results from the November 1996 aerial moose survey indicated a 26 percent loss in the total number of moose on Fort Richardson since the previous survey in 1994.

The target population size for the Fort Richardson moose herd (including Elmendorf AFB and Ship Creek) has fluctuated over the years but is currently set at 500 animals. This is a reduction from years past and is based on concerns such as



Radio tracking of bald eagles was part of the study being conducted on ERF.

moose-auto collisions, conflicts with people and pets, loss of considerable acreage of former moose habitat to construction and development, declining productivity of the herd, and excessive pressure on remaining winter habitat on Fort Richardson. Declining productivity of the herd is indicated by a significant decrease in calf:cow ratios from 60 and 58 calves/100 cows in 1986 and 1987 to 28-38 calves/100 cows in all subsequent surveys beginning in 1988. Although natural fluctuations occur in the environment, such large differences over several years of surveys are indicative of other confounding problems.

Surveys on Fort Richardson, Elmendorf AFB, and Ship Creek were initiated in the 1960s, but comprehensive written reports have been compiled only since the 1980s.

Typically, moose surveys were conducted in early winter (usually November) when snow cover is complete and light conditions are optimal. Surveys during past years were conducted from Army helicopters, later from helicopters flown by contracted pilots, and recently from two Super Cub fixed-wing aircraft flown by experienced commercial pilots under contract. One Super Cub carried a biologist/observer from USARAK and the other carried a biologist/observer from ADF&G.

Approximately 90,000 acres were surveyed annually, requiring about 18 hours of combined flying time. Data was collected from intensive aerial observations in 14 survey units on Fort Richardson, Elmendorf AFB, and the Ship Creek drainage in

Chugach State Park. Data included the number of different sized bulls observed (small, medium, and large as determined by rack size), the number of cows, the number of cows with calves, and the number of lone calves.

Productivity, survivorship, and recruitment of moose populations was determined based on the number of calves per 100 cows. The November census data for healthy, productive moose herds in Alaska with normal mortality rates typically showed 20-40 calves per 100 cows. Herds with 40-60 calves per 100 cows not only indicated highly productive herds, but also low mortality rates during the first six months of the calves' lives (calving on Fort Richardson takes place within a short period of time during mid to late May). The Fort Richardson moose herd has shown relatively high numbers of calves per 100 cows in 1986 and 1987 (60 and 58 respectively) when there were no hunts, and substantially lower numbers during 1988 through 1993 (average of 35).

Relative herd size was determined by using a Sightability Correction Factor based on an Intensive Plot Computer Model provided by ADF&G, which corrected for unsighted animals. Bull/cow and calf/cow ratios were calculated, as were percentages of cows without calves, cows with a single calf, and cows with twins. Annual reports (Quirk 1993, 1996 and B. Quirk 1994) were prepared, and these data were used to establish harvest limits that USARAK and ADF&G personnel develop jointly. Data analysis followed procedures outlined in Gasaway et al. (1986).

During 1996 and 1997, a study was conducted to develop a diameter-mass relationship model to measure and predict utilization of willows by moose. The model was used to estimate utilization of the two most common willow species browsed by moose. These site-specific estimates of browse utilization enabled USARAK biologists to identify discrete areas to be targeted for habitat rehabilitation. The application of the browse utilization model in the USARAK GIS in combination with other data layers (vegetation map, soils, topography) provided a powerful tool for the management of moose habitat and the planning of habitat improvement projects.

Current Management: Breeding Bird Surveys (BBS) and point-count stations are currently used to monitor landbird species. Waterbirds are monitored on ERF in association with the cleanup of white phosphorus from the area. Hunter check stations and hunter surveys are used to collect data on game species. Aerial surveys are used to monitor the moose population. Fish monitoring is conducted through angler success surveys.

Harvest information for fish is collected by ADF&G biologists through a statewide harvest survey. The survey, however, may not represent actual harvest, as youths less than 16 years of age are not included (Barry Stratton, pers. com.). Youths are thought to account for most of the angler effort in the Anchorage area.

Proposed Management: Conduct fish and wildlife monitoring as outlined in Table 5-15.

Other Management Alternatives Considered and Eliminated: There are other potential methods of conducting fish and wildlife monitoring. The proposed methods for conducting fish and wildlife monitoring, however, were developed specifically for use in south-central Alaska.

5.4.3.2 Planning-Level Fauna Surveys

Description and Justification: Conduct planning-level surveys for birds, fish, and mammals on Fort Richardson. These planning-level surveys focus on landbirds, waterbirds, and raptors; salmon, trout, and other fish species; and small mammals. These surveys each represent a ten-year update to determine trends in faunal diversity and improve the accuracy of the faunal database. Accurate planning-level fauna surveys are required by AR 200-3 and are required to implement this INRMP as mandated by Public Law 86-797 (Sikes Act). Per Memorandum DAIM-ED-N, 21 March 1997, these planning-level surveys are a class 1 requirement.

Measures of Effectiveness:

- Complete, maintain, and update the planning-level fauna surveys on Fort Richardson.
- Complete, maintain, and update the planning-level fauna surveys for threatened, endangered, or species-of-concern animals on Fort Richardson.
- Identify the requirement for planning-level fauna surveys in the EPR.

Table 5-15. Fish and Wildlife Monitoring.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct small mammal monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Conduct furbearer monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Conduct waterbird monitoring annually on ERF and other lakes on Fort Richardson.	USARAK ITAM	High	x	x	x	x	x
Conduct raptor monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Conduct neotropical migrant and resident bird monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Conduct two BBS routes annually.	USARAK ITAM	High	x	x	x	x	x
Conduct grouse monitoring annually.	USARAK ITAM	High	x	x	x	x	x
USARAK will, in coordination with ADF&G, conduct a one to two year fish monitoring program of Fort Richardson lakes.	USARAK ITAM	High		x	x		
Conduct wood frog monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Continue black bear data collection and monitoring.	USARAK ITAM	High	x	x	x	x	x
Conduct moose monitoring annually.	USARAK ITAM	High	x	x	x	x	x
Conduct Dall's sheep monitoring annually.	USARAK ITAM	High	x	x	x	x	x

Table 5-16. Planning-Level Fauna Surveys.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Update the planning-level fauna surveys.	USARAK Natural Resources	High			x		

- Identify the requirement for planning-level fauna surveys for threatened and endangered species of animals in the EPR.

Management History: Planning-level fauna surveys were conducted on Fort Richardson in 1994-1995.

Current Management: There are currently no ongoing actions to update the planning-level fauna surveys.

Proposed Management: Conduct planning-level fauna surveys as outlined in Table 5-16.

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current planning-level fauna database. Per the Sikes Act, AR 200-3, and Memorandum DAIM-ED-N, 21 March 1997, these planning-level surveys must be updated every 10 years.

5.4.4 Fish and Wildlife Management

Fish and wildlife population management is accomplished through actions directly affecting fish and wildlife species. Setting population number goals and stocking game species are the primary actions used in population management. Habitat management, on the other hand, affects fish and wildlife populations indirectly by manipulating their habitat.

5.4.4.1 Fish and Wildlife Population Management

Description and Justification: Conduct fish and wildlife population management on Fort Richardson. Fish and wildlife management includes working with the ADF&G to set game harvest levels, stock fish in lakes, and control nuisance animals. It also involves managing important and sensitive indicator species including furbearers, waterbirds,

raptors, neotropical migratory and resident bird species, moose, grouse, Dall's sheep, wolf, and fish. Conducting fish and wildlife population management is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS, and by Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Maintain sustainable numbers of all fish and wildlife species on Fort Richardson.
- Maintain a herd of between 450 and 550 moose on Fort Richardson.
- Provide an adequate fishery on Fort Richardson through annual fish stocking.



Five Fort Richardson lakes are stocked with fish by ADF&G.

- Maintain game population levels through hunting and fishing harvests.

Management Areas: Areas of emphasis on Fort Richardson for fisheries management are shown in Figure 5-5. ADF&G Game Management Units are shown in Figure 5-6.

Management History:

Fish Stocking: The total number of rainbow trout stocked in Fort Richardson's lakes annually from 1990-1997 ranged from 19,668 to 68,778. Included in these totals are an additional 1,000 trout that Otter Lake receives annually to support a kid's fishing derby. Chester Creek was stocked with between 4,606 and 7,700 rainbow trout per year for the period of 1990-1997.

For the period of 1990-1997, the annual stocking rates of landlocked salmon ranged from 9,000 to 28,000. The majority of landlocked salmon stocks are released in Clunie and Otter lakes. Stocking levels will remain at the current level for the next five years but may be adjusted to reflect current angler use trends or fish availability (Barry Stratton, pers. com.). Coho salmon smolt were released in Ship Creek at a rate of 54,764 to 225,000 annually over the period of 1990-1997.

A total of 11,750 arctic char were released in Clunie and Gwen lakes from 1990 through 1997. Additionally, in 1990, 500 arctic char were released in Thompson Lake. During 1998-2001, arctic char will only be stocked in Clunie Lake (Barry Stratton, personal communication).

Four thousand arctic grayling were released in Waldon Lake in 1993. At this time, there are no plans for releasing any more arctic graylings into Fort Richardson's lakes.

King salmon smolt were released in Ship Creek and Eagle River over the last five years. Eagle River has received between 102,100 and 121,066 per year. Ship Creek has received between 104,624 and 217,557 per year. ADF&G proposals are for Ship Creek stockings to remain at 210,000 for 1997 and 1998, but the Eagle River king salmon smolt stocking program has been terminated.

Harvest Information: Data on the harvest of small game is incomplete and not particularly indica-

tive of population sizes. Beginning in 1998, hunters were required to report their daily small game harvest to MPs at the main gate. This provided information to help understand trends in small game populations.

An average of about 250 spruce grouse are harvested on Fort Richardson each year, with most being killed soon after the opening of the season. Ptarmigan harvest is insignificant, with an average of about 50 per year.

Snowshoe hare harvest is very small, with an average of about 100 per year. Coyote harvest information is unavailable. Coyote numbers, which in the past have been relatively high on the post, now appear to be decreasing. Studies on these and other furbearing animals are needed to more accurately understand population sizes and dynamics.

The following harvest information was obtained from the ADF&G's records and discussions with Barry Stratton, an ADF&G Fisheries Biologist. Clunie, Gwen, and Otter lakes account for most of the rainbow trout harvest. Chester Creek also receives stocked trout and accounts for a small percentage of the harvest. Small populations of rainbow trout can be found in Ship Creek, but harvest levels are minimal. Reported rainbow trout harvest for the three major trout lakes on the post for the period of 1989-1993 ranged from 8,185 to as much as 22,132. Future harvest is expected to remain at those levels. Reported landlocked salmon harvest from Clunie, Gwen, and Otter lakes for the period of 1989-1993 ranged from 1,022 to 3,802. Clunie and Otter lakes account for almost all landlocked salmon harvest. Harvest levels are expected to remain relatively constant for the next five years. Clunie Lake accounts for the vast majority of arctic char harvest. Reported harvest of arctic char/Dolly Varden for post lakes for the period of 1989-1993 ranged from 122 to 795. Dolly Varden are difficult to distinguish from arctic char. Some misidentification and errors in survey reporting may occur. Dolly Varden are not stocked on the post, but a small population can be found in Eagle River. Harvest levels are assumed to be minimal. Harvest data for arctic grayling on the post is unavailable. Harvest data for king salmon caught within the post boundary is unavailable.

Current Management: Hunting, fishing, and trapping on Fort Richardson are conducted under regulations promulgated by the ADF&G to ensure that population numbers can be supported by the available habitat as well as being able to sustain meeting the recreational hunting demand. USARAK collects data on the harvest of game and furbearers on the post and provides these data to the ADF&G to assist the agency in promulgating harvest regulations. USARAK manages hunting and fishing on Fort Richardson in terms of areas available, dates within ADF&G seasons, safety requirements, permit and reporting requirements, and other parameters to avoid conflicts with the military mission and to provide safe, high quality recreational experiences.

Moose: Harvest goals for moose have been based on producing or maintaining a specific number of animals on post. This approach considers habitat condition and moose abundance, yet focuses on a finite herd size objective.

There is some concern over the amount and condition of winter range as well as moose reproductive levels (Sinnott, personal communication and Fort Richardson moose reports). Elmendorf AFB (1994) reported heavy browsing with plant mortality (especially willow) occurring. This report noted that snowshoe hares also browse on the willow. The moose harvest has been relatively stable.

A Moose Cooperative Management Plan (unsigned) (Gossweiler and Harkness 1992) for Fort Richardson was prepared in 1992. The plan requires that any changes to the existing hunting parameters be presented to the Alaska Board of Game in a joint Army/ADF&G proposal following census and review of data.

Specific objectives of the Cooperative Moose Management Plan (Gossweiler and Harkness 1992) were the maintenance of a herd of 600 moose (adjusted based on habitat and population data) with 35-40 bulls per 100 cows. In 2002-2006, moose harvest numbers will be based on population size and composition, reproductive status (primarily calves/100 cows), relative browsing levels (percentage of leaders browsed), and weather, with a goal of maintaining moose numbers within habitat carrying capacity. This level is dynamic, but moose



Test nettings of post lakes yield information on fish numbers and health.

populations below carrying capacity will reproduce at optimum levels to provide good sustainable harvest over the long period. The 600-moose goal has been changed recently to 500 moose.

Strategies for managing the Fort Richardson moose herd may include increasing or decreasing the number of hunters, reducing total season length, taking more moose from certain areas (e.g., the south side of the post near Anchorage), and enhancing winter habitat. Data on browse condition and moose numbers and reproduction will be used to help evaluate the success of moose management.

It is important to note the difficulty in accurately determining the carrying capacity for moose on Fort Richardson. Good productivity is normally an indicator of ample carrying capacity, but a moose herd can exceed carrying capacity and not appreciably decrease in numbers for a long time, provided winters are not severe and predation is low. It is therefore important to continually monitor productivity.

Grouse and Ptarmigan: Season dates are identified in the current ADF&G hunting regulation booklet for spruce grouse. The bag limit is five per day. Harvest levels for grouse are not expected to change over the next five years. Ptarmigan season is identified in the current ADF&G hunting regulation booklet. The daily bag limit is 10. Ptarmigan harvest levels are not expected to change over the next five years.

Furbearers: Snowshoe hare season is identified in the current ADF&G hunting regulation booklet. The daily bag limit is five. Harvest levels for snow-

Figure 5-5. Fisheries Management Areas.

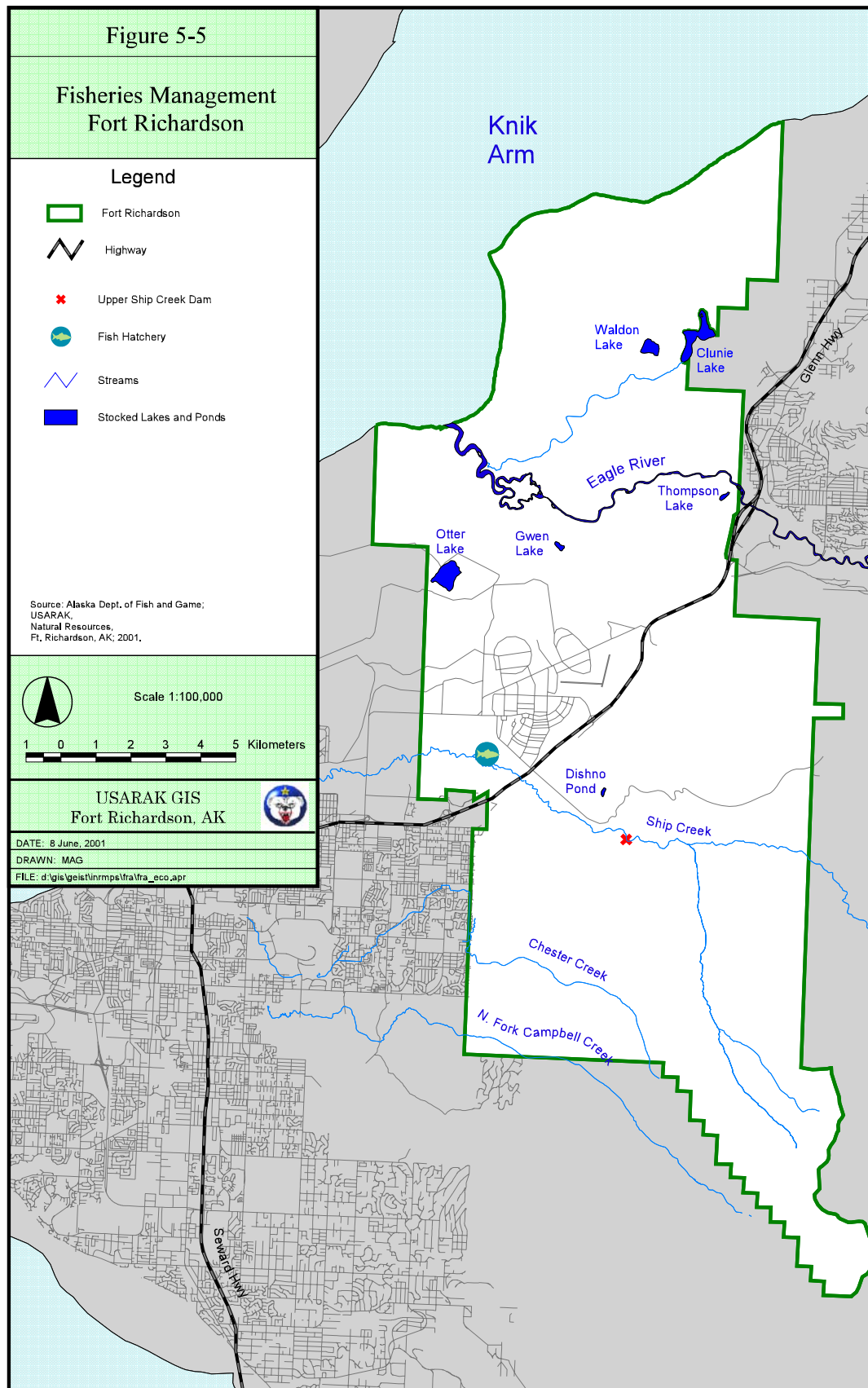
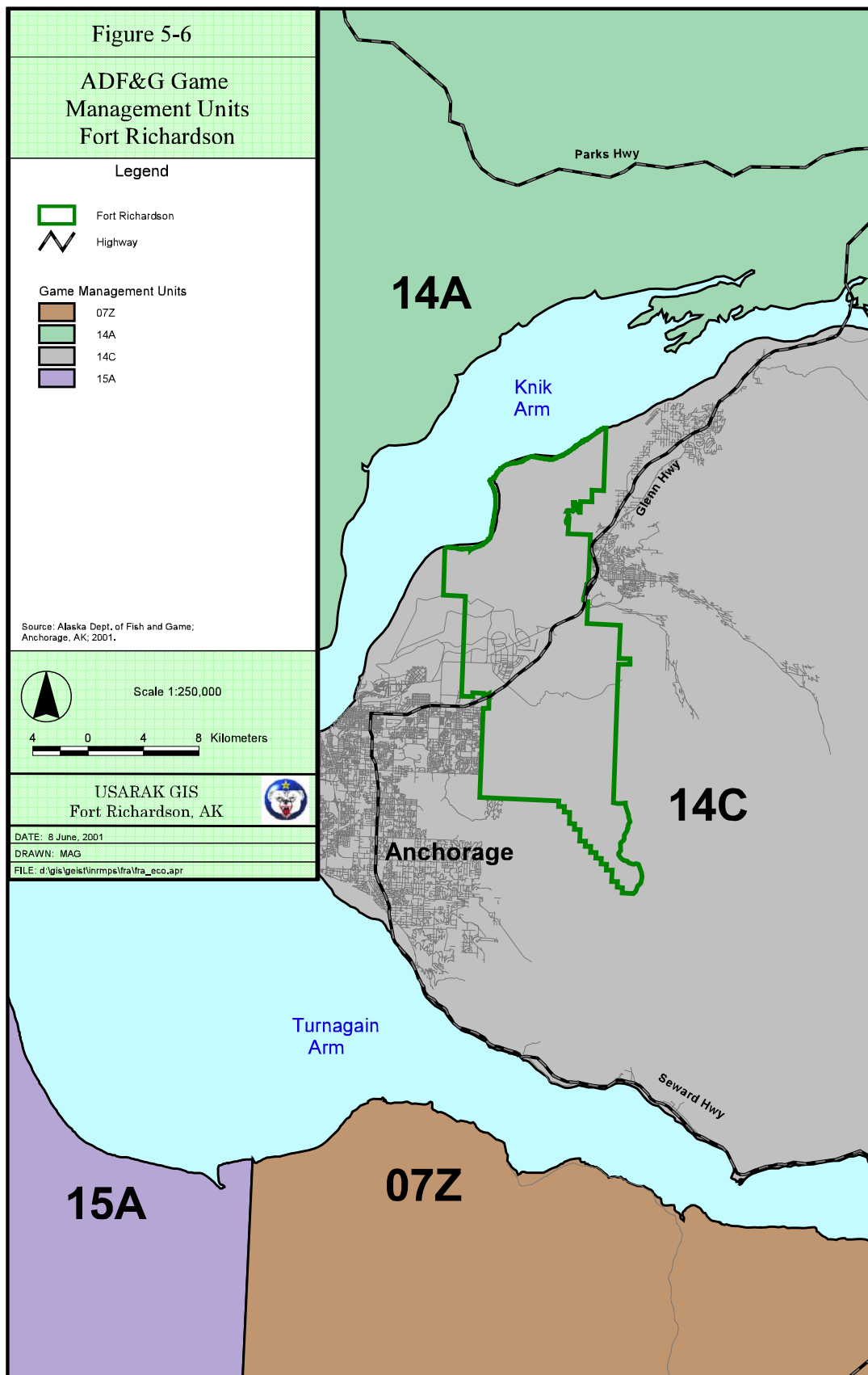


Figure 5-6. ADF&G Game Management Units.



shoe hare are not expected to change over the next five years. Coyote hunting is open on the post with a season limit of one. Open season is in accordance with ADF&G hunting regulations. Hunting is restricted to shotguns. Immediate closures may occur at the discretion of USARAK biologists.

The trapping of furbearers is prohibited on Fort Richardson, with exception of nuisance beavers that may be removed by Natural Resources Branch personnel and/or military game wardens with special State of Alaska depredation permits. Problem beavers are controlled by the Natural Resource Branch and the Wildlife Protection Section of the Law Enforcement Command (LEC).

This type of beaver control will continue through 2006. Coyotes are the only furbearer legal to hunt (shotguns only) on post. Predator control of furbearers on Army lands in Alaska will not be authorized without the appropriate NEPA documentation, public meetings, and concurrence through Army staff channels to the Secretary of Defense.

Fisheries: Fort Richardson is part of the ADF&G Anchorage Management Area for fisheries. There are 30 stocked lakes in this management area. Five are on the post: Clunie, Gwen, Otter, Thompson, and Waldon. Dishno Pond also may be stocked and managed more intensively in the future. The stocked lakes have a significant impact on the Anchorage Management Area in that they receive 23 percent of ADF&G stocking resources. This project is mainly directed at releasing hatchery-raised fish and monitoring effort, catch, and harvest levels through the Statewide Harvest Survey.

A fish hatchery and rearing facility, located on the post on Ship Creek, is operated through the joint efforts of ADF&G and the post. In return for this Real Property lease, ADF&G stocks Fort Richardson's lakes at no cost to USARAK. Stocked species include rainbow trout, landlocked salmon, arctic char, and arctic grayling. Wild-stock fisheries in post waters are minimal, although small populations of Dolly Varden and rainbow trout can be found in Eagle River.

Otter and Clunie lakes attain depths of over 30 feet and may contain warm springs that provide sufficient oxygen levels for supporting fish over winter.

Thompson and Waldon lakes are smaller in surface area and not as deep as Otter and Clunie lakes. They are therefore marginal in supporting over-wintering fish stocks. Some years in these lakes are total failures with no fish surviving over winter. Gwen Lake and Dishno Pond are shallow water bodies (eight feet or less) that never have fish survive the winter.

Gwen Lake supports a large population of freshwater amphipods in summer that provide a rich food source for fish stocks. The amphipod population is thought to flourish due to the fertilizer effect of the winter-killed fish stocks. Rainbow trout released in Gwen Lake grow faster and put on weight at higher rates than in any lake in south-central Alaska.

Rainbow trout concentrate along the shores of Fort Richardson lakes in the spring and attempt to spawn, but due to inadequate spawning habitat, no spawning takes place in the lakes. Past studies of Fort Richardson lakes have found slow growth for fish in Clunie and Thompson lakes, possibly due to tapeworms that were frequently found in the intestines of fish from these lakes.

Fish are stocked in Fort Richardson's lakes throughout the year, but most commonly between mid May and September. Stocking levels for 1998-2003 are expected to remain at current levels, although they may be adjusted to reflect current angler use trends or fish availability (Barry Stratton, personal communication).

Fish Harvest: Currently, Fort Richardson hunting and fishing permits are free, but anglers are required to carry them. A state sport-fishing license is also required of all persons 16 years of age and older. Alaska's fishing regulations are fairly lengthy and complex. They can be found in the ADF&G's annual *Sport Fishing Regulations* booklet.

The fishing season for rainbow trout is open continuously. The daily bag and possession limit is five, only one of which may be 20 inches or more in length. Anglers who harvest a rainbow trout that is 20 inches or more in length must immediately record their harvest, in ink, on their harvest record card. There is a seasonal limit of two rainbow trout 20 inches or more in length from Cook Inlet waters.

For landlocked salmon over 16 inches, there is no closed season. The daily bag limit is three and the possession limit is three. For landlocked salmon that are less than 16 inches, there is no closed season, but the bag limit is 10 per day with a possession limit of 10. The season for arctic char or Dolly Varden is open continuously. The bag limit is five per day and five in possession. The season for arctic grayling also is opened continuously. A daily bag limit is five, with legal possession being five.

Fish caught on the post come almost entirely from five major lakes (Clunie, Gwen, Otter, Thompson, and Waldon lakes), that are all stocked. Dishno Pond is also usually stocked with catchable rainbow trout. ADF&G surveys indicate that Fort Richardson's lakes are a very significant resource for Anchorage area anglers. From 1977 through 1993, 14-28 percent of Anchorage area freshwater anglers fished Fort Richardson's lakes, accounting for 31 percent of the Anchorage Management Area harvest. Virtually all fish stocked in post lakes are harvested, but only after the fish are caught an average of 2½ times.

Eagle River is closed to sport king salmon fishing from its mouth upstream to the Bailey Bridge on Poleline Road. For the portion of the Eagle River upstream from the Bailey Bridge to ADF&G markers in Chugach State Park campground, the season is four consecutive 3-day weekends (Saturday-Monday) commencing on Memorial Day weekend. A daily bag limit is one per day, and a total of two fish per season is the possession limit. Anglers

need a king salmon tag unless fishing for stocked king salmon in landlocked lakes. Fort Richardson waters are not stocked with anadromous king salmon.

Stocking rainbow trout is considered a "put and take" fishery. This is primarily because a lack of oxygen found in shallow water and ice cover result in winter kill of stocked trout. Lakes that over-winter fish do so in low numbers, as a high percentage of the stocked fish are caught during the summer fishing season. Stocking levels of rainbow trout are expected to remain at or near current levels for the next five years.

Potential for Transplanting: USARAK is committed to preserving biodiversity. Prior to any introduction of a new species to the post, there will be complete NEPA documentation and consultation with partners of this INRMP. The only potential for such transplanting of wildlife in 2002-2006 is the ruffed grouse. This interior Alaska native species could add to Fort Richardson's hunting program. The ADF&G has been transplanting birds to sites just north of Anchorage. The Fort Richardson-Elmendorf AFB area is another potential site. Birds established on Fort Richardson could be hunted, and Elmendorf AFB could be used as a source of birds for additional transplants (Elmendorf AFB 1994).

Proposed Management: Conduct fish and wildlife population management on Fort Richardson as outlined in Table 5-17.

Table 5-17. Fish and Wildlife Population Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Annually check each hunter-harvested moose, document its location on a large scale map, determine sex, and, if a bull, its rack size (small, medium or large).	USARAK Natural Resources	Medium	x	x	x	x	x
Annually stock Gwen, Otter, Clunie, Waldon, and Thompson lakes.	ADF&G	Medium	x	x	x	x	x
Participate in the Ship Creek Improvement Initiative with the goal of re-establishing king and coho salmon runs above the hatchery and below the upper dam.	USARAK Natural Resources	Medium	x	x	x	x	x
Conduct annual fish and game harvests to maintain population levels.	ADF&G	Medium	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are other potential methods for conducting fish and wildlife population management. No other options, however, would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost prohibitive.

5.4.4.2 Habitat Management

Description and Justification: Habitat management primarily includes the development and improvement of habitat for moose, ruffed grouse, and some landbirds, furbearers, and small mammals that prefer successional forest habitats. Some habitat improvement may also be conducted for fish and waterfowl. This project will improve habitat on up to 200 acres per year on Fort Richardson during 2002-2006. Habitat management for moose on Fort Richardson was advocated in the Anchorage Wildlife Plan (Whittaker 1999) as a public safety measure; it is thought that prime winter habitat on Fort Richardson will keep some moose from foraging in Anchorage, and may reduce moose/human conflicts, especially traffic accidents. Conducting habitat improvement is required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS and Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Improve the quality of habitat for selected game and nongame species.
- Emphasize habitat development and enhancement for moose, an important game and watchable wildlife species on Fort Richardson.
- Manage game habitats to support sustainable hunting and fishing programs.
- Maintain a minimum of 5,000 acres of preferred moose habitat.
- Maintain a minimum of 15,000 acres of neotropical bird habitat.
- Maintain a minimum of 4,000 acres of waterbird habitat.



Hydro-Ax™ rotary cutter.

Habitat Management Areas: Potential habitat management areas have been created to show the likelihood of habitat manipulation in any given area. These areas are shown in Figure 5-7 and the categories of habitat manipulation are described in Table 5-18.

Management History: Fort Richardson biologists have actively managed moose foraging habitat since 1975.

Current Management: USARAK utilizes two primary methods of manipulating habitat: prescribed burning and mechanical removal of vegetation. USARAK also utilizes herbaceous and woody vegetation plantings in the cantonment area to improve habitat.

Prescribed Burning: Prescribed burning is beneficial to ecosystem maintenance on much of Fort Richardson because fire is an important component of the ecosystem's development. Prescribed burning is also favored by BLM. It is a less complicated and more natural means of vegetation removal than using timber harvest or other mechanical means.

Mechanical Removal and Revegetation: Mechanical means of habitat manipulation are the second primary way to accomplish habitat management. Mechanical tools used to accomplish habitat management include commercial timber sales, timber stand improvement, firewood cutting, Hydro-Ax™ and military maneuver training. Habitat improvement areas are then planted with desired herbaceous species.

The primary method used to achieve high quality/high biomass winter moose range on Fort Rich-

Table 5-18. Habitat Management Areas.

Management Areas	Habitat Action	Habitat Type Desired	Size
Habitat Management Areas	Reduce forest density and forest understory.	Medium forest canopy with open understory	4,000 acres
	Reduce scrub vegetation on a rotational basis.	Primary successional habitat with low to no forest canopy and high density shrub layer	9,500 acres
	Eliminate all woody vegetation on a permanent basis. Maintain herbaceous and grass ground cover.	Open	2,000 acres
	Increase woody vegetative cover through wildlife improvement plantings.	Shrubland to open forest	1,000 acres
Habitat Protection Areas	No habitat management or other vegetation manipulation.	Protect habitat as it naturally occurs	41,000 acres
Non-Habitat Areas	None	N/A	4,500 acres

ardson is centered around enhancing currently used moose habitat. Consisting of early succession deciduous plant communities with a high willow component, this habitat has grown too tall and decadent and has become highly unproductive.

Enhancement of these past-prime habitats is accomplished primarily by mechanically cutting and recycling the woody plants, using a Hydro-Ax™, prior to bud-break in the spring (April) or after vegetative growth ceases in the fall (September). An alternative method is cutting the woody vegetation at ground level by scraping the soil surface with a bulldozer blade during the late winter when the ground is frozen. Mechanically cutting desirable deciduous plants causes prolific resprouting from intact root crowns, thereby increasing the annual production and growth rates during successive growing seasons.

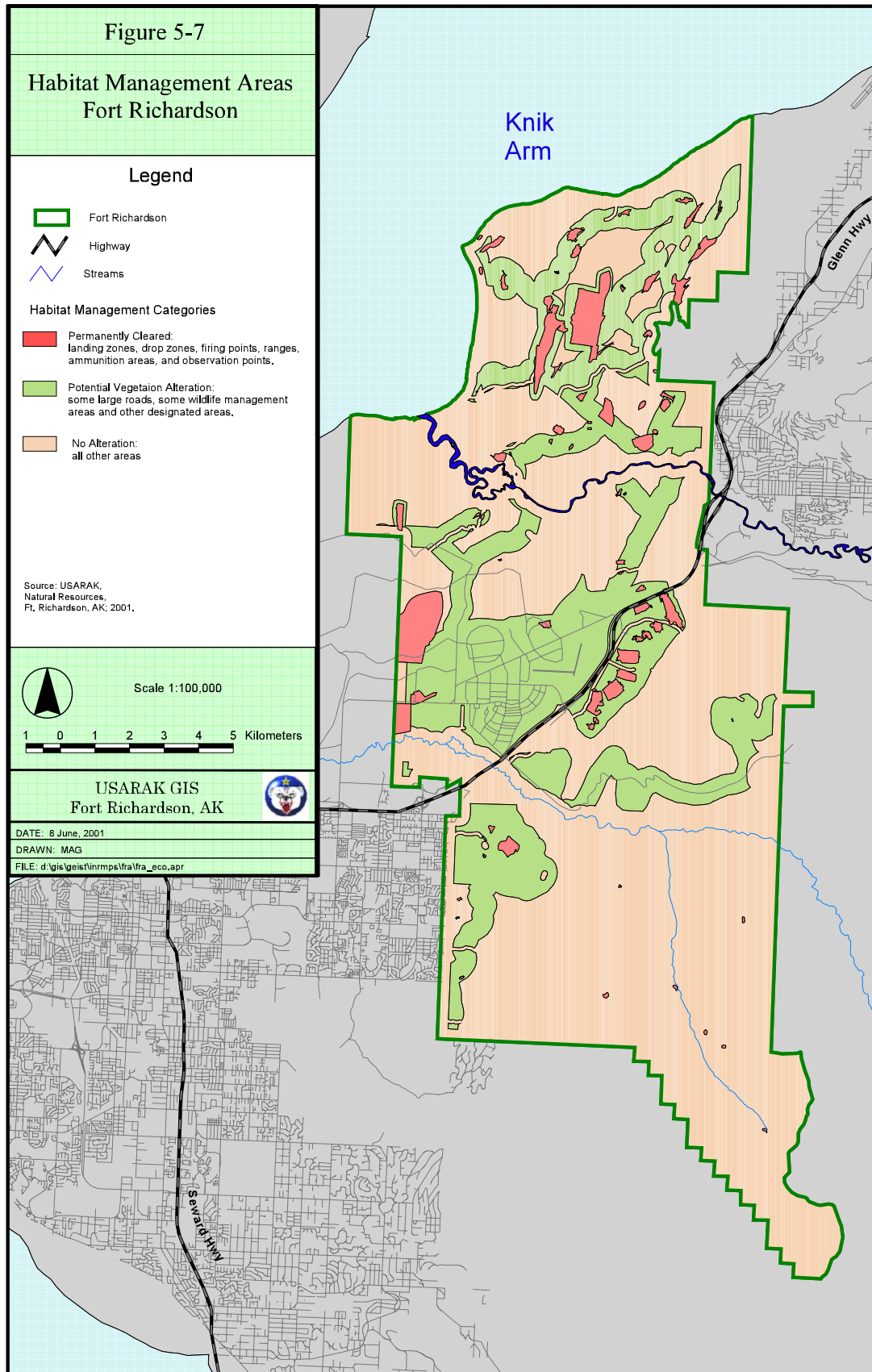
A second method of increasing winter moose range on Fort Richardson involves converting forested areas, which have little value for moose habitat, to early succession deciduous plant communities. The forest removal operation can be accomplished by use of the Hydro-Ax™ with the rotary cutting head for small trees up to three inches in diameter. Larger trees can be removed by shearing them off with the feller-buncher attachment on the Hydro-Ax™. The trees also can be removed in late winter when the ground is frozen, using a bulldozer to snap off trees and other woody vegetation at ground level. Deciduous rootstocks in the soil will resprout and

produce woody vegetation communities of willow, birch, and aspen, all desirable browse for moose. Undesirable plant species, e.g., alder and spruce, will also become established and will be a component of the vegetative community.



Hydro-Ax™ with a feller-buncher attachment.

Figure 5-7. Habitat Management Areas.



A third method for increasing winter moose range on Fort Richardson is to plant willow shoots or bundles in areas desirable for this treatment (recently cleared areas with low density willow root stocks and a low perennial grass component, e.g., primarily *Calamagrostis* and *Arctagrostis* species). Willow shoots must be collected in March or early April prior to flowering and placed in cold storage until planting time in June. The roots must be treated with a growth hormone to promote adequate root development.

Removal of trees for forest management, personal use, or military purposes also can improve moose habitat in some cases. Treatments could include salvage operations and construction and clearing for rights-of-way. Since the cost of these treatments would be incurred anyway, the additional cost for improving moose habitat would be minimal unless special efforts, such as additional removal, planting, or chemical controls, are undertaken. For example, if cutting firewood removes trees greater than four inches in diameter, it is less expensive to use the Hydro-Ax™ to complete a moose habitat improvement project.

Competition from *Calamagrostis* spp. can be reduced by using chemicals such as Roundup®, which would cost about \$100 per acre. USARAK is providing a study area to the USFS in cooperation with Oregon State University for experiments with this chemical as part of a spruce regeneration study. The ADF&G's biologists report relatively poor success using only Roundup® to control *Calamagrostis* spp. (Bill Collins, pers. com.). The chemical effectively kills the grass but does not guarantee immediate



Willow sprouting is monitored for several years following Hydro-Ax™ treatments.

establishment of other, more desired species. One solution might be to plant willow shoots and disseminate birch seed in the treated area. Fire will remove this grass, but it is generally too hot and fast to expose the mineral soil. Additionally, prescribed burning is not an option due to air quality restrictions by the Municipality of Anchorage. Mechanical scarification is needed to expose this soil if willow and other species are to successfully regenerate and compete with the grass.

There are at least two methods for improving moose-browse habitat in terms of the type of areas to be treated. The first of these is to improve habitat already vegetated with species preferred by moose. On Fort Richardson, willow is the browse preferred by moose, but balsam poplar, birch, and aspen are also of some value. In general, areas with these species are on the coastal plain below 500 feet in elevation.

The other method is to convert areas not already rich in good forage plants to species that are preferred by moose, such as willow and birch. This is accomplished most commonly by converting areas dominated by spruce to willow or by planting willow in areas that have been disturbed, perhaps in conjunction with LRAM activities. Converting spruce to moose forage habitat is possible on drier sites, but burning would be needed to keep spruce from regenerating and outcompeting the browse species. The best tactic would be to burn the area five to six years after removing the spruce overstory. This would kill the spruce seedlings, and further regeneration would be unlikely because spruce seed remains viable only for about two years. However, as burning is not an option on Fort Richardson, this technique will not be considered.

A more realistic option would be to let the deciduous plants grow with the spruce seedlings and then Hydro-Ax™ the spruce once they begin to dominate the browse species. The woody shrubs would resprout, whereas the spruce would die.

The proximity of vertical cover or the “edge effect” does not appear to be as important to moose as it is to other species, especially during winter. There is considerable evidence (Bill Collins, pers. com.) that moose will use feeding areas that are a considerable distance from cover in the winter.

During periods of hot sunny weather, moose move relatively long distances to find cover for shade. In winter, moose are likely to use cover to evade harassment or predation rather than protection from the elements. Treated areas normally provide cover within several years.

It is important to expose areas managed for moose browse to maximum sunlight. Long, narrow areas that are largely shaded are not conducive to good browse production. Ideally, treatment areas, particularly small ones, should be round or square in shape to maximize their exposure to sunlight. USARAK will treat areas that range between 10 to 40 acres, or even larger in some cases. Areas will be shaped to maximize exposure to sunlight. If areas greater than 40 acres are treated and birch is the desired regeneration species, islands of birch will be left as seed sources. These islands are also useful for moose bedding, especially during warmer days.

Rotation age is a forestry term, but it is also appropriate for the regular renovation of wildlife habitat. It can take from two to five years to produce quality browse following Hydro-Ax™ treatments to stimulate regrowth in old and unproductive moose habitats. It may take even longer (up to ten years) to produce high quality moose browse in forested areas newly cleared for moose habitat. Preferred vegetation may last 10 to 12 years before unbrowsed species such as alder and spruce grow tall enough to dominate and shade out the desirable woody plants. A 12 to 15-year rotation schedule is therefore planned for re-treating established moose browse areas.

The time of year for re-treating overgrown moose habitat is important. Cutting vegetation when food reserves are stored in the upper part of a plant can reduce vigor and weaken its condition for several years. Woody shrubs should be cut in April, before carbohydrate reserves are translocated from the roots to the aboveground portions of the plant, or in September, after the growing season has ended and food reserves have been stored in the roots. Cutting vegetation in April is desirable because it produces quick and vigorous regrowth, providing an available food source within 6 months after treatment.



The Hydro-Ax™ can clear 5 to 10 acres of small trees per day.

Another important factor is the height at which stems are cut. To induce sprouting from the roots, young woody shrubs should be cut within two to four inches above the ground surface. Older woody shrubs can be cut higher from the ground surface and still result in root sprouting. Cutting eight inches above the ground, however, may not eliminate small spruce seedlings, which would defeat the purpose of the treatment.

Depending on tree size (maximum 4" diameter) and density, the Hydro-Ax™ with the rotary head attachment can treat from 5 to 10 acres of over-mature moose habitat per day. Effective Hydro-Ax™ treatment normally requires a single pass over the vegetation for proper cutting and mulching of the woody stems and saplings. Where whole or nearly whole stems and saplings remain after one pass, a second pass with the Hydro-Ax™ may be required to complete the mulching so that only small woody pieces remain. Because decay is very slow in northern environments, it is important to ensure that adequate mulching of the vegetation takes place. This will encourage rapid breakdown and expedite the release of tied up nutrients that are crucial for successful regrowth.

Sites selected for habitat improvement will be placed within one of 12 habitat treatment groups. Each treatment group will encompass approximately the same number of total acres. Component sites within each of the 12 treatment groups will be selected in such a way as to ensure that each group has widespread and even distribution throughout the post. The objective is to have selected sites north of Eagle River (i.e., Neibar Drop Zone, McLaughlin

Range, the firewood cutting areas, and other previously cleared forest sites), within the cantonment area and north of the Glenn Highway (i.e., cemetery, landfill, antenna field, Bryant Army Air Field, Bartlett High School, and Ammo Area A), and south of the Glenn Highway (i.e., small arms complex, McVeigh Marsh, Bunker Hill area, clear cut plots, and other previously cleared forest sites).

Each of the 12 habitat treatment groups will receive treatment during one of the next 12 years. The timing of the treatment for any one site will be based on current age and condition of the vegetation. Treatment rotation for moose habitat will be delineated on the GIS. The Hydro-Ax™ will be scheduled for use at each site, but this may require short-term adjustments. For example, a very cold winter might open the option of using a bulldozer to snap trees, or mechanical breakdowns could mandate the use of other equipment.

Long-term adjustments may become necessary if equipment or operators are unavailable in any given year, or unforeseen deficiencies in moose habitat become evident in certain areas or for other practical reasons. These long-term changes will be tracked using the GIS.

Wildlife Habitat Improvement Plantings: This component of habitat improvement includes management of the cantonment area that directly affects natural resources management. Routine ground maintenance on Fort Richardson is accomplished primarily by Grounds Maintenance, DPW. The *Installation Design Guide* (Higginbotham / Briggs & Associates 1991) and the *Landscape Design Plan* (David Evans and Associates, Inc. 1987) provide information on using trees and shrubs for landscaping. Both documents provide lists of plant materials appropriate for use on Fort Richardson.

This INRMP does not include routine ground maintenance unless it is specifically designed for the benefit of natural resources. Natural resources personnel provide professional assistance for landscaping, particularly regarding species selection and care of the landscape.

Proposed Management: Conduct habitat management on Fort Richardson as outlined in Table 5-19.

Other Management Alternatives Considered and Eliminated: There are other potential methods for conducting habitat management. No other options, however, would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost prohibitive.

5.4.5 Fish and Wildlife Management Responsibilities

ADF&G has the primary responsibility for managing fish and wildlife game populations. ADF&G sets population goals and carries out fish stocking on Fort Richardson. USFWS is primarily responsible for managing nongame populations of fish and wildlife. USARAK is responsible for working together with these two agencies to conduct habitat management on Fort Richardson. Routine grounds maintenance on Fort Richardson is the responsibility of Roads and Grounds Maintenance, DPW.

5.5 Endangered Species Management

There are no known federally endangered or threatened species on Fort Richardson, but there are some rare, uncommon, and/or conservation priority species. The endangered species management program at Fort Richardson deals primarily with these rare, uncommon, and/or conservation priority species.

The endangered species program is integrated fully with other natural resources programs, especially ecosystem management. Because there are no federally listed, endangered or threatened species on Fort Richardson, all actions that protect, conserve, or enhance habitat for rare, sensitive, uncommon, and/or conservation priority species are listed under other program areas.

5.5.1 Endangered Species Management Goals

Endangered species management goals all contribute to one or more of the overall natural resources program goals of stewardship, military training

Table 5-19. Habitat Management Actions.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Conduct wildlife planting in urban areas.	USARAK Natural Resources	Medium	x	x	x	x	x
Improve and enhance moose habitat.	USARAK Natural Resources	Medium	149.7 acres	121.1 acres	129 acres	118.6 acres	115.4 acres
Enhance up to 200 acres annually of military training habitat.	USARAK Natural Resources	Medium	x	x	x	x	x
Enhance up to 30 acres per year of ruffed grouse habitat.	USARAK Natural Resources	Medium	x	x	x	x	x
Control bluejoint grass on an opportunistic basis.	USARAK Natural Resources	Low	x	x	x	x	x
Block vehicular access, including off-road vehicles, to riparian areas along lakes.	USARAK Natural Resources	Medium				x	
Improve habitat by closing and revegetating unnecessary trails.	USARAK Natural Resources	Medium	x	x	x	x	x
Evaluate the relationship between moose numbers and habitat carrying capacity and identify areas where habitat improvement is most needed.	USARAK Natural Resources	Low		x			
Create snowshoe hare habitat by piling together brush from debris left from various projects.	USARAK Natural Resources	Low	x	x	x	x	x
Enhance silver salmon habitat quality in Chester Creek.	USARAK Natural Resources	Low					x
Improve waterfowl habitat by dredging pertinent sections of McVeigh Marsh.	USARAK Natural Resources	Low					x

support, compliance, quality of life, and integration. The endangered species management goals for Fort Richardson are:

- Protect and conserve habitat for endangered, threatened, rare, sensitive, uncommon and/or conservation priority species on Fort Richardson.
- Identify and delineate endangered species distributions and their preferred habitats on Fort Richardson.
- If any listed or candidate species are confirmed, develop a monitoring program that meets their needs.
- If any federally listed species are confirmed, update this INRMP to meet the three criteria established by the USFWS with regard to avoiding critical habitat designation.

- Conduct appropriate Section 7, Endangered Species Act consultation for any actions that may impact endangered species.

5.5.2 Endangered Species Planning

Endangered, threatened, or rare species program management and planning includes all the planning, budgeting, contract oversight, and organization necessary to implement the endangered species program. The primary emphasis for this component of the endangered species management program is to ensure that rare, uncommon, and/or conservation priority species are included for management in the ecosystem management plan (see Chapter 3). There will be no endangered species management plan for Fort Richardson unless a federally listed endangered or threatened species is found on Fort Richardson.

5.5.3 Endangered Species Inventory and Monitoring

Inventory and monitoring for endangered species is accomplished through other program surveys. One of the objectives for the planning-level flora and fauna surveys was to determine if any endangered or threatened species occur on Fort Richardson. In the process of LCTA monitoring, in which vegetation is monitored across the entire post, natural resources staff continues to look for potential threatened or endangered plant species. Through landbird and waterbird monitoring, staff also continues to look for threatened or endangered bird species. Rare, sensitive, uncommon, and/or conservation priority species found on Fort Richardson will be identified, and locations mapped, through these planning-level survey and monitoring efforts.

For vascular plants, the Alaska Natural Heritage Program's Plant Tracking Database is used to guide efforts to locate uncommon taxa, and for birds, the National and Boreal Partners In Flight Program's listings of conservation priority species are used. There are no similar lists of species of conservation concern for mammals, but species known to be rare nationwide and/or in Alaska are sought in survey and monitoring efforts.

5.5.4 Endangered Species Management

Endangered species management involves protecting, conserving, and enhancing habitat for rare, sensitive, uncommon, and/or conservation priority species.

Description and Justification: Endangered species management involves protecting, conserving, and enhancing habitat for rare, sensitive, uncommon, and/or conservation priority species. There are no known federally endangered or threatened species on Fort Richardson, but there are a number of rare, uncommon, and/or priority species. Endangered, threatened, and rare species management on Fort Richardson entails monitoring and protection of sensitive habitat for bird, mammal, and plant species. Conducting endangered and threatened species management is required by the Endangered



LCTA personnel monitor core plots.

Species Act and by Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Protect all threatened and endangered species' and their habitats on Fort Richardson.
- Monitor annually to locate any threatened or endangered species on Fort Richardson.
- Receive no jeopardy opinions for threatened or endangered species.
- Conserve habitat for rare, sensitive, uncommon, and/or conservation priority species on Fort Richardson.

Management History: Threatened and endangered species surveys have been conducted in conjunction with a number of surveys since 1995. No threatened or endangered species were located in the 1995 floristic inventory, the 1997 wetlands inventory, the 1998 vegetation mapping project, the 2000 ecological land survey, or during annual LCTA monitoring and landbird and waterbird monitoring efforts.

Current Management: Current management for endangered species is limited to continuing the ongoing search to locate potential endangered or threatened species.

Proposed Management: Continue endangered species management on Fort Richardson as outlined in Table 5-20.

Other Management Alternatives Considered and Eliminated: There are no other options to endan-

Table 5-20. Endangered Species Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Continue surveying for threatened and endangered species on Fort Richardson.	USARAK Natural Resources	High	x	x	x	x	x
Conserve habitat for rare, sensitive, uncommon, and/or conservation priority species through actions listed under habitat management and fish and wildlife management.	USARAK Natural Resources	High	x	x	x	x	x
Implement bald eagle habitat protection by developing primary and secondary zones for each eagle nesting site.	USARAK Natural Resources	Medium	x	x	x	x	x
Implement the USFWS general measures for the management and protection of eagle habitat.	USARAK Natural Resources	Medium	x	x	x	x	x

gered species management. If an endangered species is located on Fort Richardson, USARAK is legally mandated to take appropriate steps to protect habitat for that species. Other actions would be too minimal or would be cost prohibitive.

5.5.5 Endangered Species Program Responsibilities

The U.S. Fish and Wildlife Service is responsible for administering the Endangered Species Act. USARAK is responsible for locating any species that are listed as threatened or endangered on Fort Richardson. USARAK is responsible for conducting Section 7 consultation with USFWS for any actions that may affect endangered or threatened species.

5.6 Special Interest Areas Management

Designation of a special protection status for important or fragile natural areas is an effective management tool. In accordance with AR 200-3, areas that contain natural resources warranting special conservation efforts will be identified during the inventory and classification process. After appropriate study and coordination, such areas may be managed as special interest areas for their unique features. Per AR 200-3, this INRMP “*will address the special management necessary for these areas, and all current and future land uses will consider*

the uniqueness of these areas and plan accordingly to ensure conservation of their resources.”

5.6.1 Special Interest Areas Goals

Special interest areas management goals all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. The goals for special interest areas management are:

- Identify and provide protection for areas of special ecological or cultural concern.

5.6.2 Special Interest Areas Management Plan

Special interest areas program management and planning includes all the planning, budgeting, contract oversight, and organization necessary to implement the special interest areas program. The primary emphasis for this component of the special interest areas program is the preparation and update of the special interest areas management action plan every five years.

Description and Justification: Prepare, update, and implement a special interest areas management action plan for Fort Richardson. The special interest areas management action plan identifies, delineates, and proposes measures to protect and conserve special interest areas on Fort Richardson. Updates of the special interest area management plan are required by Public Law 86-797 (Sikes

Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, update, and maintain a special interest areas management action plan.
- Decrease disturbance in special interest areas on Fort Richardson.
- Involve resource agencies in the planning process for special interest areas management and the public in review of the plan.

Management History: The first special interest areas management action plan for Fort Richardson was completed in 2001.

Current Management: Current management actions to update the special interest areas management action plan will cease in 2002. If this INRMP is not approved and funded, no new special interest areas action management plan will be prepared, updated, or implemented. Policies already in place in the current special interest areas management action plan will continue.

Proposed Management: Prepare and update the special interest areas management action plan as outlined in Table 5-21.

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current special interest areas management action plan with updates at least every five years. NEPA documentation is also legally mandated.

5.6.3 Special Interest Areas Inventory and Monitoring

Inventory of special interest areas is conducted to locate, identify, delineate, and map areas of unique or sensitive status. Annual monitoring is accomplished through other programs such as LCTA, aerial monitoring, and fish and wildlife monitoring.

5.6.4 Special Interest Area Management

Designation of special protection status for sensitive or fragile areas is an important management tool. It is easier and more cost effective to place restrictions on the use of some areas, to minimize damage or disturbance, than to repair damage or disturbance after it has occurred.

Description and Justification: Manage special interest areas on Fort Richardson. Special interest areas on Fort Richardson are old-growth forest areas, krummholz forest areas, alpine tundra areas, cultural resource areas, Ship Creek riparian area, Eagle River corridor, other riparian areas, lakes, Eagle River Flats, other wetlands, and the Glenn Highway greenbelt. Special interest areas will be individually managed according to their specific needs. Conducting special interest area management is required by Public Law 86-797 (Sikes Act) to implement the INRMP.

Measures of Effectiveness:

- Reduce impacts in wetlands, riparian areas, lakes, alpine tundra areas, old-growth forests, krummholz forests, and historic cultural sites.

Table 5-21. Special Interest Areas Management Action Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Prepare annual updates of the special interest areas management action plan.	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update special interest areas management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update.	USARAK Natural Resources	High					x

- Reduce the impact of training and recreation activities in special interest areas.

Management Areas: Special interest areas on Fort Richardson include old-growth forest areas, krummholz forest areas, alpine tundra areas, cultural resource areas, Ship Creek riparian area, the Eagle River corridor, other riparian areas, lakes, Eagle River Flats, other wetlands, and the Glenn Highway greenbelt. Other areas afforded protection under the special interest area program include McVeigh Marsh Waterfowl Refuge, Otter Lake and Otter Creek Wildlife and Recreation Area, Gwen Lake Wildlife and Recreation Area, Clunie Lake Wildlife and Recreation Area, Waldon Lake Wildlife and Recreation Area, North Fork Campbell Creek Anadromous Fish Stream, and Chester Creek Anadromous Fish Stream. The locations of these special interest areas are shown on Figure 2-11.

Management History: These special interest areas have been protected since 1998 as they are included in the environmental limitations overlay for Fort Richardson (see this chapter, Section 5.1.4), effectively reducing the impact on these areas from military activities.

Current Management: Special interest area management includes protecting special interest areas through regulations, map overlays showing restrictions, and actual barriers. USARAK Regulation 350-2, Range Regulation, has many general provisions to protect environmental resources, including special interest areas, on Fort Richardson. The provisions include:

- NEPA review of actions affecting natural resources.
- Restoration of sites damaged by digging.
- Removal of wire, rope, string, concertina wire, and other training debris.
- Wildfire prevention measures.
- Preference for use of established roads and trails.
- Stream crossing requirements.

- Protection of trees with diameters greater than four inches.
- Prohibitions on harassment of wildlife.
- Spill prevention and containment measures.
- Hazardous materials handling procedures.
- Coordination of ground-disturbing activities with the Natural Resources Branch.
- Controls on outdoor recreation, including swimming, hunting, fishing, and firewood cutting.

Military mission-related restrictions within special interest areas are included in the environmental limitations overlay map and environmental awareness materials prepared for distribution to military units who use training areas on Fort Richardson. Most military mission-related restrictions involving special interest areas have been in place for some time with no significant adverse impacts on the mission. Physical barriers can be used to protect special interest areas. However, this is only used in extreme cases because barriers tend to draw attention to an area.

Proposed Management: Conduct special interest areas management on Fort Richardson as outlined in Table 5-22.

Other Management Alternatives Considered and Eliminated: There are other potential methods for conducting special interest areas management. No other options, however, would meet the needs of the military mission. The proposed management actions listed above carefully balance the needs of the military mission, recreation, and the ecosystem. Other actions would be too minimal or would be cost prohibitive.

5.6.5 Special Interest Area Responsibilities

USARAK has primary responsibility for the management of special interest areas. Within USARAK, DPW has the responsibility to locate, identify, monitor, and manage special interest areas. DPTSM Range Control provides control over access into these areas.

Table 5-22. Special Interest Areas Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Manage and protect old-growth forest areas.	USARAK Natural Resources	Medium	x	x	x	x	x
Manage and protect krummholz areas.	USARAK Natural Resources	Medium	x	x	x	x	x
Manage and protect alpine tundra areas.	USARAK Natural Resources	Medium	x	x	x	x	x
Manage and protect cultural resource areas.	USARAK Natural Resources	Medium	x	x	x	x	x
Manage and protect Ship Creek riparian area.	USARAK Natural Resources	Low	x	x	x	x	x
Manage and protect Eagle River corridor.	USARAK Natural Resources	Medium	x	x	x	x	x
Manage and protect other riparian areas, lakes, and wetlands.	USARAK Natural Resources	Medium	x	x	x	x	x
Manage and protect Eagle River Flats.	USARAK Natural Resources	Medium		x			
Manage and protect the Glenn Highway greenbelt.	USARAK Natural Resources	Medium	x	x	x	x	x

5.7 Pest Management

5.7.1 Pest Management Goals

Pest management goals all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. The pest management goals for Fort Richardson are:

- Meet requirements defined by the Army for pest management program Measures of Merit.
- Use alternative pest management strategies (sanitation, trapping, biological control, mechanical control, etc.).
- Select the least toxic pesticides, if pesticides must be used.
- Select precision application techniques that target specific pests and habitats.
- Emphasize education, communication, monitoring, inspection, and record keeping.

5.7.2 Pest Management Plan

Pest management program management and planning includes all the planning, budgeting, contract

oversight, and organization necessary to implement the pest management program. The primary emphasis for this component of the pest management program is the preparation and update of the installation pest management plan, at least every five years.

Description and Justification: Maintain and update the installation pest management plan. Fort Richardson updated its Installation Pest Management Plan (IPMP) in 1996. The goal of the IPMP is to minimize the adverse environmental impacts of using pesticides while achieving an acceptable level of control and cost effectiveness. Completion and updates of the plan are required to meet USARPAC pest management Measures of Merit. This plan discusses specific actions necessary to accomplish pest management on Fort Richardson. Pest management planning is a requirement AR 200-5. Updates of the pest management plan are required by Public Law 106-65 (Military Land Withdrawal Act) as mitigation for the land withdrawal LEIS, and by Public Law 86-797 (Sikes Act) every five years to implement the INRMP. Per Memorandum DAIM-ED-N, 21 March 1997, this component of the INRMP is a class 1 requirement.

Measures of Effectiveness:

- Complete, maintain, and update a pest management plan for Fort Richardson.
- Meet the pest management Measures of Merit through pest management planning.
- Designate a qualified/trained pest management coordinator.
- Continue to reduce pesticide use.
- Involve resource agencies in the planning process for pest management and the public in review of the plan.

Management History: The Fort Richardson pest management plan was first completed by ERD in 1998. The plan was updated by the Corps of Engineers in 2000.

Current Management: Current management actions to update the installation pest management plan will cease in 2002. If this INRMP is not approved and funded, no new pest management plan will be prepared, updated, or implemented. Policies already in place in the current pest management plan will continue.

Proposed Management: Prepare and update the installation pest management plan for Fort Richardson as outlined in Table 5-23.

Other Management Alternatives Considered and Eliminated: There are no alternatives to maintaining a current installation pest management plan with updates at least every five years. NEPA documentation is also legally mandated.

5.7.3 Pest Inventory and Monitoring

Pest inventory and monitoring is accomplished through surveys by pest control personnel. Other natural resource monitoring efforts also contribute to pest inventory and monitoring. LCTA, in particular, monitors vegetation annually and identifies any invasive and exotic plant species in the training areas.

5.7.4 Pest Management

Measures of Merit: In 1994, the Department of Defense developed a Measures of Merit Program for all military installations which requires a pest management plan to be prepared, signed, and implemented. Other requirements include the reduction of pesticide use on all installations by 50 percent over a seven year period (1994-2000) and certified training of all pest control personnel.

Installation Pest Management Plan: Fort Richardson has a recently completed and approved pest management plan. Reduction in pesticide use on Alaskan installations is being closely coordinated with USARPAC. All Alaskan Army pest control personnel are in compliance with the basic training certification required by Measures of Merit.

Chemical Use: All chemicals used on Fort Richardson are EPA-approved. Pesticide use on Fort Richardson has fallen dramatically over the last two years. Significant decreases in the number of soldiers based on the post has contributed to that reduction. Remodeling and new construction have

Table 5-23. Installation Pest Management Plan.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Prepare annual updates of the installation pest management action plan.	USARAK Natural Resources	High	x	x	x	x	x
Prepare and update installation pest management action plan for the planning period of 2007-2011.	USARAK Natural Resources	High					x
Complete NEPA documentation for update.	USARAK Natural Resources	High					x



Coexisting with wildlife in urban situations sometimes requires patience and tolerance.

also helped reduce the volume of pesticides used since these buildings are more pest resistant and new construction usually has fewer pest problems.

Reduced chemical use is a major goal of the pest management program. USARAK understands obvious and long-term threats to both humans and ecosystems from chemical abuses. The pest management program has switched emphasis to surveillance before chemical application. More efficient equipment and techniques are also helping to reduce chemical volume and toxicity.

The most difficult objective for Fort Richardson is the reduction of herbicides. In general, the acreage of improved grounds has not been reduced enough to allow for a 50 percent reduction in herbicides without changing the appearance of the post. Reduced grounds maintenance has eliminated about 1/8th of improved grounds since 1993, but significant future reductions are unlikely. Dandelion (an exotic species) control is especially difficult to achieve if herbicide reduction objectives are implemented.

Pesticide Certification: At present, Pest Control has three certified applicators, and the golf course also has one. These positions are needed to provide minimum in-house capabilities. These personnel will undergo required refresher training, and any new personnel will receive training required for certification. USARAK has the option to use a combined Army, Navy, and Air Force pesticide training facility in Hawaii or the Army school at Fort Sam Houston, Texas.

Invasive and Exotic Plant Control: The primary noxious plant community on Fort Richardson is bluejoint grass (*Calamagrostis* spp.). Although a native species, it is undesirable in some locations since it replaces native spruce and birch forest. This perennial grass is a primary invader of areas that have been opened to at least 40 percent sunlight. These conditions often are associated with range construction or spruce bark beetle outbreaks. As described below, there are at least three ways to control bluejoint grass:

- Burning can be effective if fires are hot enough. Late summer burning conditions are generally too “green” for hot burns unless some sort of desiccant is sprayed to dry out green vegetation or there is fallen timber, such as from an earlier spruce bark beetle outbreak. Frozen soils are often a problem until green-up. Timing is ideal in late May or early June if soils are thawed or there is dead wood on the ground in sufficient quantities to generate the needed heat. The Chugach National Forest has a prescribed burning program (Dr. Ed Holsten, pers. com.). Air quality permits for burning, however, are difficult to obtain.
- Blade scarification is a possibility. This works well in interior Alaska where there are deep alluvial soils. There is a question as to whether soils on Fort Richardson are deep enough to allow scarification without drastic loss of topsoil. Scarification must be deep enough to get bluejoint grass rhizomes (Dr. Ed Holsten, pers. com.). Shallow soils on Fort Richardson reduce the viability of this option.
- The low toxicity herbicide called Roundup® does an excellent and effective job of killing this grass if applied late in the fall.

Dandelion (*Taraxacum* spp.) control constitutes the major herbicide use in the Fort Richardson cantonment area. Dandelions and other broad-leaf weeds are controlled throughout the cantonment area, with emphasis on high visibility areas.

Soil sterilants are used in areas where bare ground is required. Such areas include target areas on small arms ranges, ammunition storage facilities, live-fire ranges where soldiers lie on the ground

to shoot, and special areas where duds must be removed, such as hand grenade ranges.

A researcher studying spruce regeneration on Fort Richardson has used small quantities of Roundup® to control competition on sites where various treatments are being tested. The main species being controlled is bluejoint grass. Early fall treatment with this herbicide has shown promising results in terms of reducing competition for young spruce trees.

Devil's club (*Oplopanax horridus*) is considered noxious due to its thorns that prevent use of areas where it abounds. But, unless it is within the cantonment area, it is not controlled.

Alder (*Alnus* spp.) is considered noxious since it invades quickly after disturbance and prevents the establishment of more desired species. Alder, however, is also a nitrogen-fixing species and serves an important purpose in plant succession. It is not specifically controlled except for specific situations such as in moose habitat improvement.

Wildlife Conflicts: Wildlife conflicts on Fort Richardson, ranging from insects and small rodents to large mammals such as moose and bears, are handled by three Command entities: USARAK Natural Resources, Provost Marshal's Office, and Pest Control Section of the DPW. The Provost Marshal and Natural Resources Branch, assisted by ADF&G, manage problems with large mammals. Small species, such as birds, rodents, and insects, are managed by Pest Control.

Animal Damage Control (ADC), U.S. Department of Agriculture, has skills useful in resolving conflicts with wildlife. USARAK will use ADC on a reimbursable basis as required during the next five years through interagency fund transfers (MIPRs).

Although no formal agreement exists for interdepartmental pest management on Fort Richardson, the following breakdown of responsibilities and policies by species usually applies:

Northern Pike: Northern pike occur in some of the lakes on Fort Richardson. USARAK will work together with ADF&G to eliminate northern pike from Fort Richardson lakes.

Domestic Pets: Cats and dogs running loose within the cantonment area and on the ranges are the responsibility of the Provost Marshal using Military Police personnel. This is not normally done by military game wardens but is taken care of by Military Police regular road units. Military Police road units and military game wardens have access to standard equipment such as slip nooses and tranquilizer guns but are not properly or routinely trained for use of dart guns on domestic animals. For this type of assistance, USARAK Natural Resources, Elmendorf AFB game wardens or ADF&G are notified. Generally, stray dogs and cats are a minor problem at Fort Richardson.

Insects and Small Mammals: Pest Control handles insect and small mammal problems within the cantonment area. Common pest problems include German cockroaches (the biggest problem on the post), mosquitoes, spiders, ants, fleas, hornets and wasps, silverfish, firebrats, beetles, and small mammals such as shrews, deer mice, voles, and squirrels.

Beavers: Beavers occasionally create problems on Fort Richardson by plugging water intake pipes, preventing natural drainage of lakes and ponds, and denuding lake shores of vegetation. Overflow resulting from dammed areas leads to erosion of trails and roads and problems with power plant intakes. Beavers causing significant problems are controlled by USARAK Natural Resources and the military game wardens under depredation permits issued by ADF&G.

Moose: The Fort Richardson Natural Resources Branch and the military game wardens jointly handle moose complaints and investigate injured and road-killed animals. Road-killed moose must be reported to the Alaska State Troopers as soon as possible so that the meat can be salvaged. The Fort Richardson Chaplain's office maintains a list of eligible charity recipients for salvageable meat. Road-killed moose on Fort Richardson are a relatively small problem with fewer than six killed annually.

Conflicts sometimes occur between moose and people during calving season and have resulted in injuries and, in rare instances, death. Closure of trails and placement of warning signs until cows

with young calves have left the area has proven effective in reducing such conflicts.

Bears: The Fort Richardson/Elmendorf AFB area has an estimated 30-40 black bears (including sows with cubs) and three to five brown bears. Bears occasionally damage homes, facilities, and personal property, and sometimes injure, or even kill, people (the latter being relatively rare).

Initial response to a potential bear problem on Fort Richardson is carried out by the military game wardens. It is their responsibility to assess the situation and determine if more assistance is needed. In most cases, the responding officers can resolve the problem by temporarily restricting public access to the area until the animal leaves or by chasing the bear away. The latter is accomplished by first using cracker rounds and then, if that does not work, rubber bullets. As soon as is practical, responding officers will notify USARAK Natural Resources, either by telephone or radio, of the situation and how it was resolved. As with all wildlife encounters on USARAK-controlled lands, unless the animal poses a serious threat to human safety or is critically injured, no action will be taken by initial responders that might result in injury or death to the animal without authorization from the USARAK Chief of Natural Resources or the USARAK Chief of Environmental Resources.

If initial responders determine that the situation warrants further assistance they will immediately notify, by radio or telephone, both USARAK Natural Resources and the Elmendorf AFB Conservation office. Subsequent procedures to be followed are outlined in a multi-agency memorandum of agreement for dealing with bear/human conflicts on both military installations. This Memorandum of Agreement (MOA) provides for the establishment of a joint human/wildlife conflict advisory board and includes specific responsibilities of each agency involved.

Mountain and glacier training are a key element in USARAK mission. A Land Use Permit from the State of Alaska enables USARAK soldiers to conduct training exercises on the nearby Knik Glacier. A stipulation of the permit was the preparation and implementation of a Bear Management Plan to reduce the potential for bear and human interaction

during this training. The plan, as prepared and used since 1990, will continue to be implemented until superseded or revised.

Cliff Swallows: Construction of nests by cliff swallows in post housing areas and work facilities creates a nuisance and health concern. Droppings are unsightly and are a growth medium for a fungus that can cause respiratory infection (histoplasmosis). Swallows also are infested with mites (Elmendorf AFB 1994).

The Fort Richardson Pest Control Shop responds to calls regarding swallow nesting problems within the cantonment area. The most practical and ethical way to resolve these conflicts is to remove or destroy the nests prior to egg laying. In the past, permits from both ADF&G and the USFWS have been required to remove swallow nests. In 1997, the USFWS suspended the requirements for a permit to remove swallow nests. In lieu of the permit, they requested a report at the end of the season describing the nests that were removed. ADF&G still requires permits be obtained but allows nests with eggs to be removed under special conditions such as where droppings near windows or doors may affect human health or around electrical power boxes. USARAK will continue to ensure that ADF&G permits are applied for on a yearly basis. The potential of using nesting platforms to attract swallows away from family housing quarters, aviation hangars, and other buildings will be investigated. Other remedies may include the use of repellent structures and materials in areas where nesting activity is discouraged.

Predator Control: There is a special provision contained within the Alaska administrative code requiring U.S. Army concurrence before any wolf control activities can be performed on military lands in Alaska. Any predator control on Fort Richardson must be approved by USARAK, U.S. Army Pacific, and Department of Army and documented using the NEPA process.

Other Animals: Pest Control handles most other animal problems as required. These include squirrels in attics and crawl spaces, rabid animals, etc. Each problem is evaluated individually for appropriate action. All other wildlife control problems are handled on a case-by-case basis by the Natural

Resources Branch in cooperation with the military game wardens.

Injured Animals: Injured animals often are reported to the military game wardens, especially if they are discovered after normal duty hours. Moose injured in motor vehicle accidents are one example of such incidents. Injured wild animals are a specialized problem that often requires the expertise of wildlife biologists to make decisions regarding rehabilitation or destruction of the animals. For this reason, the military game wardens are required to contact personnel within USARAK Natural Resources prior to dealing with injured animals. Post veterinary personnel may be called upon to assist with injured animals.

Bird-Aircraft Strike Hazard Management: The Canada goose population in Anchorage greatly expanded during the 1980s and 1990s, to over 4,000 birds by 1997. This can be attributed to an abundance of suitable nesting habitat and increased food sources from fertilized, turfed areas. As the goose population in Anchorage grew so did associated conflicts. Most complaints were related to fecal contamination of lawns, playgrounds, ball fields, and golf courses. On September 22, 1995, an Aircraft Warning and Control System (AWACS) jet from Elmendorf AFB, north of Anchorage, crashed and burned as a result of Canada geese being ingested into and subsequently shutting down two of the four engines as the aircraft lifted off the runway. All 24 Air Force personnel in the aircraft died in the accident.

The tragic incident at Elmendorf AFB has sensitized the community to aircraft safety issues at all local airports. As a direct result of this concern, the USFWS and ADF&G, in 1996, organized the Anchorage Waterfowl Working Group (AWWG). The group, comprised of state and federal agencies along with interested individuals and organizations, has developed a Goose Management Plan and associated Environmental Assessment that is expected to be implemented in 1998.

A summary of the actions planned to reduce the goose problems include a consensus of the AWWG to reduce the Anchorage goose population by half (2,000 geese) within four years. This would include habitat modification treatments, ongoing public

education programs, egg collections, gosling transplants, and lethal methods.

USARAK, in coordination with the Alaska Army National Guard, has instituted a Bird Aircraft Strike Hazard (BASH) program at Bryant Army Airfield. As part of the program, the Army has and will continue to evaluate goose movements and use of the airfield, and the need for habitat modification to reduce aircraft hazards.

The BASH program will develop ways of reducing the air strike hazard by manipulating habitat to decrease the number of birds near the runway. The role of the Natural Resources Branch is to provide technical expertise and make recommendations to Public Works, USARAK Aviation Safety, Airfield Operations, and the Pest Control Branch to reduce bird use of critical areas. The BASH program will include the following features:

- Continue depredation of key nuisance species. The pest management program will repair or place wire on hangers where swallows and pigeons are roosting or nesting.
- Work with all area airfield managers to establish like-minded BASH programs. The Air Force will be using Fort Richardson airfields, beginning in FY 2000. This will require coordination to ensure Army airfields meet Air Force BASH standards.
- Produce education materials for BASH, including videos, posters, handouts, training, bird books, binoculars, etc.
- Purchase equipment used to keep birds off the airfield.
- Attend BASH training workshops and other similar opportunities.
- Attend Army BASH team meetings: A BASH team needs to be developed for Fort Richardson.
- Oversee BASH programs for all three posts (hazing, data collection, and analyzing the results after the BASH season is over).
- Ensure that Public Works, the fire department, and AFS all work together to keep birds off the airfields.

- Oversee the depredation program, particularly for swallows at Fort Richardson.
- Accompany Fort Richardson Airfield Ops at least once a week on its hazing patrols.

5.7.5 Pest Management Program Responsibilities

Pest management is the responsibility of DPW, specifically a Certified Pest Controller. Other organizations involved include PMO game wardens and DPW Environmental Resources. The Pest Management Coordinator for USARAK is within Natural Resources Branch, DPW, Fort Richardson. He is not involved in routine pest management operations, but serves as a technical advisor to the program.

Noxious plant control is carried out by the Fort Richardson Pest Control Shop. The golf course maintains some herbicides and uses its own personnel to apply them. In general, Pest Control Shop personnel apply herbicides on the golf course while the certified applicator at the golf course deals with fungicides.

Noxious animal control responsibility is shared at Fort Richardson. In general, Pest Control Branch, DPW, and the Provost Marshal work within the cantonment area. The Provost Marshal, assisted by ADF&G and the Alaska State Troopers, handles problems with game animals. Animal Damage Control (ADC), U.S. Department of Agriculture, has skills that may be useful in controlling noxious animals.

5.8 Urban Area Management

This section involves management of natural resources within or pertinent to the cantonment area and other urban areas, such as the golf course, ammunition storage areas, and Cottonwood Park.

5.8.1 Urban Area Management Goals

Urban area management goals all contribute to one or more of the overall natural resources program goals of stewardship, military training support, compliance, quality of life, and integration. The

urban area management goals for Fort Richardson are:

- Improve urban wildlife habitat.
- Improve aesthetics of recreational areas.
- Enhance quality of life for individuals living and working on Fort Richardson.

5.8.2 Urban Area Planning

Urban area program management and planning includes all the planning, budgeting, contract oversight, and organization necessary to implement the urban area management program. The primary emphasis for this component of the urban area management program is the preparation and update of the landscape management action plan every five years.

5.8.3 Urban Area Monitoring

Urban area monitoring involves surveys of urban areas to identify sick and dying trees, branches and limbs that may cause safety hazards, and new areas that can be landscaped or included in the “no-mow” program.

5.8.4 Urban Area Vegetation Management

Description and Justification: Urban area management involves managing vegetation and wildlife habitat in the cantonment area at Fort Richardson. Managing vegetation involves active landscaping along with a maintenance program. Urban area management is important because it can reduce grounds maintenance costs, reduce pollution, and improve wildlife habitat. Urban area management enhances aesthetics and improves quality of life for soldiers and civilians on Fort Richardson. Urban area management is required by AR 200-3.

Measures of Effectiveness:

- Reduce grounds maintenance costs.
- Receive “Tree City” designation annually.
- Use Alaska native plants and non-invasive ornamentals for landscaping.
- Use construction practices that minimize adverse effects on the natural habitat.

- Reduce pollution by reducing the use of fertilizer and pesticides.
- Practice integrated pest management, recycle green waste, and minimize rainwater runoff.
- Implement water-efficient practices.

Management Areas: Priority areas for landscaping are those areas with the highest volume of traffic on post. “No-mow” areas are those areas that have been taken out of the mowing cycle and are being converted back to wildlife habitat.

Management History: Since 1995, Fort Richardson has been designated annually as a “Tree City U.S.A.” by the National Arbor Day Foundation. Landscaping the cantonment area has a long history at Fort Richardson, but a formal landscaping plan was not completed until 1996 (Gossweiler 1996). This plan is currently being implemented. Improving urban wildlife habitat is a newer program and has been implemented since 1996.

Current Management:

Urban Area Vegetation Management: Fort Richardson has parcels of mature native forest adjacent to cleared sites within the cantonment area. In addition, large cleared areas around buildings have been planted with native and ornamental trees and shrubs. Together this constitutes an “urban forest” setting in the cantonment area. In the past, mortality

of the planted trees was high and required replacement on a yearly basis. Practices today result in fewer trees being planted each year with more time being devoted to watering and other maintenance needs. Planting bigger, hardier trees and shrubs, although initially more expensive, has proven to be more economical in the long run. In some instances, professional landscaping companies are being contracted to plant trees and shrubs, if they provide at least a two-year survival guarantee.

A Landscape Management Plan (Gossweiler 1996) has been prepared and is currently being implemented. Trees and shrubs chosen for landscaping on the cantonment area have been selected from a recommended list of landscaping materials for south-central Alaska. Two complete references for landscaping materials for Fort Richardson are the *Directory of Alaska Landscape Plant Sources* (Alaska Plant Materials Center 1994) and the *Landscape Design Guide for the 6th Infantry Division (Alaska)* (David Evans and Associates, Inc. 1987).

Whenever possible, USARAK will use native species transplanted from surrounding areas for landscaping developed areas. Trees can be transplanted using a front end loader since their roots are only about 8-10 inches deep. Both native and ornamental species will be purchased and used for aesthetic purposes. Non-invasive ornamentals to be used include crabapple (*Malus* spp.), lilac (*Syringa* spp.), flowering almond (*Prunus glandulosa*), shrub dogwood (*Cornus* spp.), maple (*Acer ginnala*), cotoneaster (*Cotoneaster* spp.), Canada red cherry (*Prunus virginiana*), Colorado blue spruce (*Picea pungens*), May Day tree (*Prunus padus*), weeping birch (*Betula pendula*), etc. These will provide color on road medians, in front of dark treelines, around Otter Lake, etc., and will not outcompete native species or invade other areas.

Attempts will be made to reduce the high mortality of trees transplanted in the cantonment area. Emphasis will be placed on planting fewer trees in a given year and improving efforts to protect them. This will require installing effective tree guards such as metal stakes, guying the trees to prevent damage during high winds, and the use of tree



Contractors planting trees.

trunk guards to prevent sun scalding. Educational efforts also need to be directed to turf maintenance operators to avoid close mowing of grass next to large trees. The mower often makes contact with the tree, damaging the bark, and providing an opportunity for disease or insect damage to occur. This can result in the mortality of damaged trees.

Spruce bark beetles have infested spruce trees within and adjacent to the cantonment area. This beetle prefers larger trees that have more ornamental appeal, and their mortality rate can be very high. Primary techniques for preventing infestation are:

- Avoiding damage to trees during construction and other activities.
- Removing damaged trees, especially wind-thrown trees and stumps, and pruning debris prior to mid-May.
- Pruning lower branches of full-crowned spruce in the fall.
- Thinning denser stands to reduce competition and increase tree vigor.
- Promoting healthy trees by proper watering and fertilization.
- Spraying appropriate pesticides prior to the end of May.

Current practice is to use the pesticide Sevin SL® on trees greater than six inches in diameter. The Cooperative Extension Service (1991) has a publication, *Spruce Bark Beetles, Control Options for the Home or Lot Owner*, which can help identify infected trees and details prevention and control options. Another publication, *Spruce Bark Beetles in Firewood* (ADNR 1992), provides ways to minimize the spread of spruce beetles by properly using firewood. When killed by bark beetles, white spruce trees serving ornamental and aesthetic purposes in the cantonment area will be replaced with beetle-resistant conifers such as Colorado blue spruce.

Fort Richardson has been designated as a “Tree City U.S.A.” by the National Arbor Day Foundation since 1995 and will seek to maintain that designation in 2002-2006. This status depends upon an annual Arbor Day celebration, with a proclamation issued by the post commander, a tree ordinance with policies for tree planting and maintenance,

establishment of a Tree Board to plan and maintain the tree management program, and an annual expenditure of at least \$2 per capita on urban tree management.

Urban Area Habitat Management: Emphasis on managing urban wildlife has opened new avenues for resource management. An emerging awareness that urban areas can be managed for wildlife and still be attractive, combined with reduced funding for grounds maintenance, has created new opportunities for habitat management within Fort Richardson’s cantonment area.

Programs for reducing grounds maintenance involve decreasing mowing and establishing forest, grassland, and wildflower areas to lower maintenance costs on improved and semi-improved grounds. The tradition of neatly manicured grass on military installations can be hard to change, but natural resources staff is working to generate acceptance of these programs.

The predominance of manicured lawns on military installations emerged in the 1950s with the hiring of agronomists. These programs were given big boosts in the late 1960s by Lady Bird Johnson, and her emphasis on beautification. Maintaining this appearance, however, is becoming prohibitively expensive. Fort Sill, the installation that has won the most Communities of Excellence competitions,



Fort Richardson is one of only two Tree City USAs in the state of Alaska.



has removed about 700 acres from its mowing schedule and is now converting this land to wildlife habitat, saving tens of thousands of dollars in maintenance costs.

“No-mow” is a designation for areas that are dropped from the grass mowing cycle. These areas are accepted by the public most readily when they are natural extensions of already wild lands, such as narrowing a mowed road shoulder or the extension of a woody area into a field.

During the first season of transition to a “no-mow” status, some areas may be somewhat unsightly due to growth of undesirable plants. Herbicides may be needed to eliminate invading exotic species and to promote faster recovery of native vegetation. This herbicide use, particularly spot treatment, may cause some temporary eyesores. There are also increased pest problems associated with wildlands near buildings. Experience on other installations, however, has shown that these problems are relatively minor. Over the long-term, “no-mow” areas save money; Fort Sill calculated that savings would be about \$10,000 annually for every 100 acres removed from mowing.

Fort Richardson has reduced grounds maintenance on the cantonment area in recent years by decreasing the size of maintained turf areas. The greatest benefits have been gained by reducing the width of turf areas along roads and streets by 10 to 20 percent. Sections of turf areas furthest from roads and streets are no longer maintained and are allowed to revert back to a natural state. In some places tree lines are being established in front of areas to be removed from mowing. Remote areas on the cantonment, such as the Warehouse Loop, also have been removed from routine grounds maintenance.

The acceptance of wildflower plantings is growing nationwide. This is probably an off-shoot of the publicity given to the roadside wildflower program in Texas and other places. Wildflowers can be established at Fort Richardson, but success has not been good to date. The science of establishing wildflowers is specific to regions, and many aspects of wildflower plantings in Alaska are not well understood. There also are problems with obtaining sufficient quantities of seed. In addition, these wildflower areas must be mowed annually, and they must often be replanted from time to time. Planting requires specialized equipment and seed mixtures.

Wildflowers were tried at Fort Richardson. With few exceptions, results were aesthetically and economically unsatisfactory. During 2002-2006, specific plantings of wildflowers will not be undertaken unless special circumstances dictate otherwise. The goal with regard to wildflowers is to let them occur naturally in “no-mow” sites.

Proposed Management: Continue the implementation of urban area vegetation management on Fort Richardson as outlined in Table 5-24.

Table 5-24. Urban Area Vegetation Management.

OBJECTIVE	RESPONSIBLE FOR IMPLEMENTATION	PRIORITY	IMPLEMENTATION				
			2002	2003	2004	2005	2006
Apply annually to be designated as a “Tree City U.S.A.”	USARAK Natural Resources	Low	x	x	x	x	x
Install 5 acres of new landscaping plantings annually in the cantonment areas.	USARAK Natural Resources	Low	x	x	x	x	x

Other Management Alternatives Considered and Eliminated: There are other potential methods for conducting urban area vegetation management. The proposed management actions, however, carefully balance economic and ecological considerations, and the aesthetics of vegetation management in urban areas on Fort Richardson. Other actions would be too minimal or would be cost prohibitive.

5.8.5 Urban Area Management Responsibilities

Routine grounds maintenance on Fort Richardson is conducted primarily by Roads and Grounds Maintenance, DPW. The Natural Resources Branch provides some professional assistance to Roads and Grounds Maintenance, but most of this program is not included in this section.